

Special Alloy Wire for High Temp Heating or Thermocouple Applications - PTRH13

$$in^2/\Omega = \frac{I^2 C_t}{p}$$

I = Current
 C_t = Temperature factor
 p = Surface load W/in²

Common Names: Platinum Rhodium; Platinum-13% Rhodium

Uses: Bare Thermocouple wire. Oxidizing or Inert. Do not insert in metal tubes. Beware of contamination. High Temperature.

Composition

Ni	Cr	Fe	Al	Si	Mn	Cu	C	Ti	Pt	Rh
None/Trace	13%	Balance								

Technical Data

Resistivity (Ω/cm)	117.7	Resistivity (Ω/sqmf)	92
Resistivity (μΩ/cm)	19.568	Nom. Temp. Coeff. of Resistance (TCR)	
Std. Res. Tol. <.020"		Std. Res. Tol. >.020"	
Thermal EMF vs. Cu	-1.075	Specific Heat (20°C)	
Density (g/cm³)	20.28	Density (lb/in³)	0.733
Thermal Conductivity		Coeff. of Linear Expansion (X 10⁻⁶)	
Approx. Melting Point	2315°C	Max. Continuous Operating Temp.	1450°C
UTS – Hard (KPSI)		YTS Tensile – Hard (KPSI)	
UTS – Stress Relieved (KPSI)		YTS Tensile – Stress Relieved (KPSI)	
UTS – Annealed (KPSI)		YTS Tensile – Annealed (KPSI)	
Magnetic Attraction	None	Emissivity – fully oxidized	
Designations/Specifications	ANSI/MC96.1 TypeR	Forms Available	Wire, Ribbon, Insul.

Alloy Data

Diameter mm	Resistance at 20° C Ω/m	Resistance at 20° C Ω/kg	Weight kg/1000 m	Surface area cm ² /m	cm ² /Ω at 20°C
10.4049	0.0023	0.0013	1724.2807	326.8804	142048.9044
9.2658	0.0029	0.0021	1367.4148	291.0952	100317.4199
8.2515	0.0037	0.0034	1084.4077	259.2276	70845.9160
7.3481	0.0046	0.0054	859.9731	230.8486	50032.6246
6.5437	0.0058	0.0085	681.9887	205.5765	35333.9143
5.8273	0.0073	0.0136	540.8409	183.0710	24953.4281
5.1894	0.0093	0.0216	428.9057	163.0293	17622.5472
4.6213	0.0117	0.0343	340.1372	145.1817	12445.3510
4.1154	0.0147	0.0545	269.7407	129.2880	8789.1244
3.6648	0.0185	0.0867	213.9138	115.1342	6207.0334
3.2636	0.0234	0.1379	169.6411	102.5299	4383.5155
2.9063	0.0295	0.2192	134.5313	91.3054	3095.7153
2.5882	0.0372	0.3486	106.6880	81.3098	2186.2483
2.3048	0.0469	0.5543	84.6073	72.4084	1543.9667
2.0525	0.0591	0.8814	67.0966	64.4815	1090.3763
1.8278	0.0746	1.4014	53.2099	57.4224	770.0428
1.7249	0.0837	1.7672	47.3848	54.1881	647.1189
1.6277	0.0940	2.2284	42.1973	51.1361	543.8177
1.5360	0.1056	2.8099	37.5778	48.2559	457.0067
1.4495	0.1186	3.5433	33.4640	45.5380	384.0536
1.3679	0.1331	4.4680	29.8005	42.9731	322.7461
1.2908	0.1495	5.6340	26.5381	40.5527	271.2253
1.2181	0.1679	7.1044	23.6328	38.2686	227.9290
1.1495	0.1885	8.9585	21.0456	36.1132	191.5441
1.0848	0.2117	11.2965	18.7417	34.0792	160.9674
1.0237	0.2377	14.2446	16.6899	32.1597	135.2718
0.9660	0.2670	17.9621	14.8628	30.3483	113.6780
0.9116	0.2998	22.6499	13.2357	28.6390	95.5313
0.8603	0.3366	28.5610	11.7867	27.0260	80.2814

Diameter mm	Resistance at 20° C Ω/m	Resistance at 20° C Ω/kg	Weight kg/1000 m	Surface area cm ² /m	cm ² /Ω at 20°C
0.8118	0.3780	36.0148	10.4964	25.5038	67.4659
0.7661	0.4245	45.4139	9.3473	24.0673	56.6961
0.7229	0.4767	57.2660	8.3240	22.7117	47.6456
0.6822	0.5353	72.2112	7.4127	21.4325	40.0398
0.6438	0.6011	91.0567	6.6012	20.2254	33.6481
0.6075	0.6750	114.8206	5.8785	19.0862	28.2768
0.5733	0.7580	144.7863	5.2350	18.0112	23.7629
0.5410	0.8511	182.5724	4.6619	16.9967	19.9696
0.5106	0.9558	230.2199	4.1515	16.0394	16.7818
0.4818	1.0733	290.3024	3.6970	15.1360	14.1029
0.4547	1.2052	366.0650	3.2923	14.2835	11.8516
0.4291	1.3534	461.6001	2.9319	13.4790	9.9597
0.4049	1.5197	582.0679	2.6109	12.7198	8.3698
0.3821	1.7066	733.9751	2.3251	12.0034	7.0337
0.3606	1.9163	925.5268	2.0705	11.3273	5.9109
0.3403	2.1519	1167.0694	1.8439	10.6893	4.9673
0.3211	2.4165	1471.6495	1.6420	10.0873	4.1744
0.2859	3.0471	2340.0210	1.3022	8.9830	2.9480
0.2546	3.8424	3720.7898	1.0327	7.9996	2.0819
0.2268	4.8451	5916.3045	0.8189	7.1238	1.4703
0.2019	6.1096	9407.3196	0.6495	6.3439	1.0384
0.1798	7.7041	14958.2669	0.5150	5.6494	0.7333
0.1601	9.7147	23784.6441	0.4084	5.0310	0.5179
0.1426	12.2500	37819.1738	0.3239	4.4802	0.3657
0.1270	15.4470	60135.0139	0.2569	3.9897	0.2583
0.1131	19.4783	95618.6912	0.2037	3.5529	0.1824
0.1007	24.5617	152040.1096	0.1615	3.1640	0.1288
0.0897	30.9718	241753.9357	0.1281	2.8176	0.0910
0.0799	39.0548	384404.9152	0.1016	2.5092	0.0642
0.0711	49.2472	611229.5066	0.0806	2.2345	0.0454
0.0633	62.0997	971895.7664	0.0639	1.9898	0.0320
0.0564	78.3064	1545379.2245	0.0507	1.7720	0.0226
0.0502	98.7426	2457256.2511	0.0402	1.5780	0.0160
0.0447	124.5123	3907201.6679	0.0319	1.4053	0.0113
0.0398	157.0074	6212711.7866	0.0253	1.2514	0.0080
0.0355	197.9829	9878626.9622	0.0200	1.1144	0.0056
0.0316	249.6522	15707677.0999	0.0159	0.9924	0.0040
0.0281	314.8061	24976256.3985	0.0126	0.8838	0.0028
0.0251	396.9637	39713916.9412	0.0100	0.7870	0.0020

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